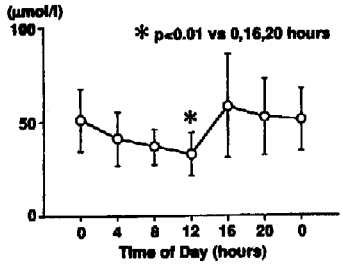


Thus, a marked circadian rhythm was detected in the plasma concentration of $NO^{2-} + NO^{3-}$. Since this morning decrease in $NO^{2-} + NO^{3-}$ is consistent with the period of highest incidence of acute myocardial infarction, the morning decrease in NO production may contribute to the higher morning incidence of acute myocardial infarction.

2:15

## 791-2 Early Non-Invasive Assessment of Reperfusion by Myocardial Protein Release Patterns

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Prognosis after acute myocardial infarction is related to TIMI flow in the infarct-related artery (IRA) 90 minutes after thrombolytic therapy. To determine the efficacy of non-invasive assessment of reperfusion we measured CKMB mass, cardiac troponin T and myoglobin in 105 patients (59.1 [10.1] years), at 0, 30, 60 and 90 minutes after intravenous streptokinase ($1.5 \times 10^6$U over 30–60 minutes), and assessed angiographic patency of the IRA at 90 minutes. The median time from symptom-onset to treatment was 2.8 hours. The myocardial protein levels were compared to pre-thrombolytic values to determine an index which identified TIMI flow grade <3. TIMI 3 flow in the IRA was seen in 59 patients, TIMI 0 or 1 in 26, and TIMI 2 in 20. A troponin T ratio $\leq$ 10 at 90 minutes detected failure to achieve TIMI 3 flow with 95% sensitivity, 58% specificity, 65% positive predictive accuracy (PA), and 94% negative PA. The corresponding values for myoglobin and CKMB mass ratios of 10 were 88% and 91% sensitivity, 65% and 49% specificity, 69% and 61% positive PA, and 86% and 87% negative PA, respectively.

*Conclusions:* Following streptokinase for acute myocardial infarction, comparison of myoglobin, troponin T and CKMB mass levels at 90 minutes with initial values, provides an accurate non-invasive means of detecting incomplete reperfusion. This may identify patients who would benefit from early catheterization and further reperfusion therapies.

2:30

## 791-3 The Predictive Value of Fibrinogen, C-Reactive Protein and Interleukin-6 on Admission in Severe Unstable Angina

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Recent studies suggest that inflammation is involved in unstable angina (UA). We studied the relation between markers of inflammation and in-hospital prognosis in 211 consecutive pts with severe UA. The clinical endpoint was persistent UA for which urgent coronary angiography was indicated, despite standard oral and intravenous anti-anginal therapy. Medical therapy alone was successful in 135 pts (64%). Persistent UA was present in 76 pts (36%); of these, 6 died, 10 had a myocardial infarction and 63 needed urgent PTCA or CABG. Fibrinogen levels on admission were significantly higher in the group with persistent UA; 3.70 v 3.28 g/L, $p < 0.001$. Levels of C-Reactive Protein and Interleukin-6 were 3.12 v 2.45 mg/L and 3.42 v 3.22 pg/mL (NS).

We separately studied the effects of duration of angina prior to admission on the relation between inflammatory markers and prognosis. In a predefined subgroup of 116 pts with recent onset UA (angina at rest that started <24 hrs before admission) those with persistent UA (35 of 116 pts = 30%) had significantly higher levels of Fibrinogen (3.63 v 3.22 g/L, $p < 0.05$), as well as CRP (3.97 v 1.97 mg/L, $p < 0.01$) and IL-6 (4.05 v 2.88 pg/mL, $p < 0.05$) compared with those who could be stabilised with medical therapy. All values are geometric means and adjusted for age, sex, body mass index and smoking behaviour.

We conclude that in patients with UA, higher levels of Fibrinogen – and in recent onset UA also higher levels of CRP and IL-6 – are associated with adverse in-hospital prognosis, underscoring the role of inflammation in the pathogenesis of unstable angina.

2:45

## 791-4 Soluble E-Selectin, ICAM-1 and VCAM-1 Levels in Systemic and Coronary Circulation in Patients With Variant Angina

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In order to assess the plasma levels of soluble adhesion molecules including E-selectin, intercellular adhesion molecule-1 (ICAM-1) and vascular cell adhesion molecule-1 (VCAM-1), antecubital venous plasma samples were collected from 18 patients with variant angina (VA), 14 patients with stable effort angina (SA) and 16 control subjects (C). Samples were also collected from the aortic root (AO) and coronary sinus (CS) in 13 VA at baseline and after the resolution of spasm in the left coronary artery induced by intracoronary injection of acetylcholine.

| | E-selectin | ICAM-1 | VCAM-1 |
|---|---|---|---|
| C | 38 ± 4 | 182 ± 18 | 699 ± 45 |
| VA | 50 ± 4* | 285 ± 15** | 887 ± 88 |
| SA | 39 ± 4 | 187 ± 11 | 737 ± 38 |

mean ± SE ng/ml, * $p < 0.05$, ** $p < 0.01$ vs C and SA

| | Baseline | | After spasm | |
|---|---|---|---|---|
| | AO | CS | AO | CS |
| E-selectin | 52 ± 4 | 53 ± 5 | 53 ± 6 | 59 ± 6 |
| ICAM-1 | 293 ± 24 | 236 ± 16* | 260 ± 16 | 287 ± 24* |
| VCAM-1 | 833 ± 90 | 676 ± 83** | 760 ± 66 | 867 ± 113 |

ng/ml, *$p < 0.05$, ** $p < 0.01$ vs AO

The CS-AO differences in ICAM-1 and VCAM-1 levels were significantly increased after spasm as compared with the baseline, respectively. In conclusions, venous plasma E-selectin and ICAM-1 levels were higher in VA, indicating an association of an inflammatory reaction with coronary spasm. In VA, both soluble ICAM-1 and VCAM-1 appeared to be trapped in the coronary circulation at baseline, suggesting an autoprotective mechanism, and released into coronary circulation following spasm and reperfusion.

3:00

## 791-5 Evidence of Diffuse Myocardial β-adrenoceptor Downregulation after Myocardial Infarction in the Absence of Cardiac Failure

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Myocardial ischemia leads to activation of the autonomic nervous system. In the setting of acute myocardial infarction (AMI) there is evidence of sustained sympathetic overactivity. Acutely the net balance of this activation may be beneficial. Whether this also leads to abnormalities of myocardial β-adrenoceptor (βAR) density is not known. This density can be determined non invasively using positron emission tomography (PET). The aim of this study was to assess whether there are significant changes in myocardial βAR density in the subacute phase of infarction. We studied 25 patients (mean age 52 ± 11 years, range 31–72) whose first manifestation of ischemic heart disease was an AMI. All patients had single vessel disease and did not suffer from diabetes, hypertension or renal disease. Results in patients were compared with those obtained in 18 age matched controls (mean age 48 ± 14 years, range 23–65, p = NS vs patients). All patients were in NYHA class 1, they were studied between 1 and 2 months post AMI and none was on chronic β blockade. Regional myocardial βAR was measured by PET using $^{11}$CGP 12177 as the ligand. *Results:* There was a significant difference in whole heart βAR density in patients compared to controls (5.78 ± 0.90 vs 8.35 ± 2.00 pmol/g, $p < 0.001$). In the patients, βAR density was reduced to a comparable extent both in the infarcted and the remote non-infarcted regions (5.70 ± 1.30 vs 5.79 ± 1.00 pmol/g, p = NS) supplied by angiographically normal or non significantly diseased coronary arteries.

*Conclusions:* 1- In the subacute phase of infarction there is a significant downregulation of myocardial βARs suggesting sustained sympathetic overactivity. 2- The reduction of βAR density affects both infarcted and remote non-infarcted myocardium to a similar extent. This suggests a diffuse myocardial autonomic dysfunction which might play a role in the genesis of left ventricular remodelling.